Docket No.: YOR919990159US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s):	Bolle et al.
Docket No.:	YOR919990159US1
Serial No.:	09/290,645
Filing Date:	April 12, 1999
Group:	2134
Examiner:	Matthew Smithers

Title: System and Method for Liveness Authentication Using an Augmented Challenge/Response Scheme

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AFFIDAVIT UNDER 37 C.F.R. §1.131

We, the undersigned, hereby declare and state as follows:

1. We are the named inventors of the invention described and claimed in the above-referenced U.S. patent application.

2. In September, 1998, we filed an "Invention Disclosure" (reference YOR8-1998-0524), a copy of which is enclosed as Exhibit 1, at the IBM T.J. Watson Research Center that evidences conception of an invention falling within one or more of the claims of the above-referenced application.

3. The Invention Disclosure cited above contains a description of the claimed invention.

4. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true.

5. I understand that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and may jeopardize the validity of the application or any patent issuing thereon.

Date: 9/23/03 Ruud M. Bolle

Ruud M. Bolle

Date: 9/23/03 Jonathan H. Connell

Jonathan H. Connell

Date: 9/25/03 Nalini K. Ratha

Nalini K. Ratha

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Disclosure YOR8-1998-0524

Created By: Nalini Ratha **Created On:** 09/09/98 05:59:38 PM
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Required fields are marked with the asterisk (*) and must be filled in to complete the form .

Summary

Status	Submitted
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Attorney/Patent Professional	Louis J Percello/Watson/IBM
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Inventors with Lotus Notes ID's

Inventors: Jonathan Connell/Watson/IBM, Nalini Ratha/Watson/IBM, Ruud M Bolle/Watson/IBM

Inventor Name > denotes primary contact	Inventor Serial	Div/Dept	Manager Serial	Manager Name
Connell, Jonathan	516612	22/J8ND	085475	Bolle, Rudolf M. (Ruud)
Ratha, Nalini K.	788906	22/J8ND	085475	Bolle, Rudolf M. (Ruud)
Bolle, Rudolf M. (Ruud)	085475	22/J8NA	765592	Nunes, Sharon L.

Inventors without Lotus Notes ID's

IDT Selection

Main Idea

***Title of disclosure (in English)**

Image validation through challenge response

***Idea of disclosure**

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

An inexpensive method to generate tags for live images which can be used to authethicate them later.

Method can be used with fingerprint scanners, face cameras, or document imagers for use in e-commerce.

Multiple encoder units of the same type can be interchanged (nothing specific to a single box).

Tight physical integration prevents external images from being fed into the input.

Method insures image was acquired at time requested (saved image with previous response will not pass).

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?

The input sensor feeds the sensed image to an encoder built into the same package as the imager. The encoder might be included on the same silicon chip as the imager, as a separate chip in a

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multi-chip-module or hybrid, or as part of a chip stack. The encoder reads an external challenge from a server and generates a response based on parts of the actual image acquired. The encoding function can optionally be tuned using internal configuration bits (EEPROM, ROM, RAM, laser trimming, etc). Because it uses parts of the actual image, the response is tightly tied to a particular image and hence its "liveness" can be guaranteed. A different challenge can be used for each transaction (the space is large and already-used values can be recorded to prevent re-use) so stored reponses have no counterfeiting value. Furthermore, because the only way to feed an image to the enoder is via a channel within the same physical package, there is no way a stored image can be used to generate a valid response to a new challenge.

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?

Even computationally simple encoding functions can be used, system can assure the server that the image was acquired directly in reponse to its request, the encoding functions can be made unique (no problem with fake ATMs), and the unit can be easily replaced in the field with any unit from the same source.

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.

Sept. 28. 1998

***Critical Questions (Questions 1 - 7 must be answered)**
Patent Value Tool (Optional - this may be used by the inventor and attorney to assist with the evalu
Post Disclosure Text & Drawings

(Form Revised 12/17/97)